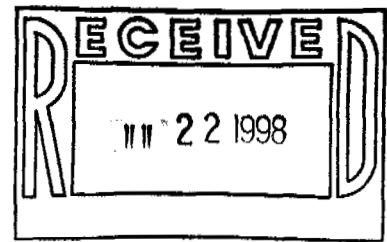




Safe Sites of Colorado & Rocky Mountain Remediation Services

## 779 Closure Project



### INTEROFFICE CORRESPONDENCE

DATE: July 16, 1998

TO: Duane Parsons, DOE, Radiological Protection Oversight, Bldg. 460, X6458

FROM: Mike Grube, Final Survey Radiological Engineer, 779 Closure Project, B706, X2863

SUBJECT: RESPONSE TO CLOSEOUT RADIOLOGICAL SURVEY PLAN COMMENTS

This memo is in response to your e-mail comments dated 6/13/98 on Rev. 1 of the Closeout Radiological Survey Plan. I have attached a copy of your comments with responses inserted after each comment.

The Closeout Radiological Survey Plan is presently being circulated for signature and should be approved within the next few days. As soon as it is approved, distribution of the document will occur.

If you have any questions, or care to discuss this further, please call me at extension 2863 at your convenience.

mg

cc:  
w/ attachment

R. W. Bistline, DOE  
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ADMIN RECORD

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# MEMORANDUM

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**DATE:** July 13, 1998  
**TO:** Mike Grube, B779 Final Survey RE  
**FROM:** Duane Parsons, DOE Radiological Protection Oversight  
**cc:** Kevin Daniels, Tim Melberg, Bruce Wallin, Dave Nickless, Dr. Bob Bistline  
**SUBJECT:** Comments on the B779 Cluster Closeout Radiological Survey Plan (CRSP), Rev. 1

1. All lessons learned from the B123 final survey need to be incorporated into the B779 CRSP. One of the key lessons learned from B123 was that formal procedures need to be developed for characterization and final surveys, how is B779 going to implement this lessons learned?

**Response:**

Unfortunately, the development of formal procedures as well as an entire final survey program is not within the control of the B779 project. Many of us recognize the need for such a program, however the driving force needs to be Kaiser-Hill and DOE. Discussions I've had with SSOC and RMRS management personnel has not yielded any tangible results. In lieu of additional procedures, several sections have been added to the CRSP to increase it's level of detail and delineate additional final survey requirements. These sections include details on upgrading and downgrading survey area classifications, and requirements and implementation of isolation controls. In addition, more detail will be added to the final survey instructions.

2. It is expected that KH will soon receive technical direction from DOE to follow MARSSIM for B779 and other RFETS buildings. Therefore, you should ensure that the CRSP follows all MARSSIM guidance unless you state reasons in the CRSP why your not following MARSSIM guidance and describe the equivalent, alternate means.

**Response:**

The intent in this proposed revision to the B779 CRSP which you just reviewed is to fully incorporate MARSSIM methodology. However, as stated in Section 1.3 paragraph 2 of MARSSIM, "MARSSIM provides guidance for conducting radiation surveys and site investigations. MARSSIM uses the word "should" as a recommendation, that ought not be interpreted as a requirement. The reader need not expect that every recommendation in this manual will be taken literally and applied at every site. Rather it is expected that the survey planning documentation will address how guidance will be applied on a site specific basis."

My interpretation to the above quotation is that the proper use of MARSSIM is as general "guidance" in the development of a comprehensive Survey Plan, and that explaining exceptions to all MARSSIM guidelines should not be a requirement. However, major deviations from MARSSIM guidance will be delineated in the CRSP.

3. Since MARSSIMs relies heavily on the characterization survey to plan and conduct the final survey, it would seem appropriate that the CRSP include a detailed discussion on B779 cluster characterization results. If characterization surveys have not been performed yet, then, a detailed discussion should be included on how the characterization surveys will be used during final survey.

**Response:**

Characterization surveys have been performed on 90% of the areas in the B779 CA. However, due to the nature of the project and the ongoing stripout of gloveboxes, and other equipment, these surveys really serve as scoping surveys since contamination in the various rooms can easily change. A summary of the characterization surveys obtained to date will be included in the CRSP, however we recognize that the surveys are not complete. Because of the history of the building and the strong potential for high levels of contamination to exist in the overhead, the decision was made not to perform extensive overhead surveys at the present time. The intent is to perform detailed characterization surveys after contaminated equipment stripout and prior to final survey.

4. There is no discussion about an independent verification survey, which should take place prior to demo. Additionally, there is no discussion about what internal and external QA/QC oversight of the final survey process will be performed.

**Response:**

The intent is to have an independent verification survey performed on B779. Initially the plan was for the B779 project not to be involved in the procurement of an independent survey team. The ultimate responsibility for the independent verification should lie with project oversight. However, the direction given to the project has been to procure an independent survey team. B779 will assume the responsibility of this team procurement, and provide a general statement of work, however in order to ensure independence, this survey team will report to Kaiser-Hill. Kaiser-Hill will be involved in the details of the verification survey based on input from the independent verification team.

Oversight is an integral part of the D&D process for Bldg 779. Based on lessons learned from B123 it is anticipated that increased internal and external QA oversight will occur.

A general discussion of independent verification surveys has been included in the CRSP.

5. Will floors that cannot be decontaminated easily be allowed to remain with fixed contamination? If so, then the CRSP should address this and discuss how these areas will be controlled.

**Response:**

Attempts will be made to remove all fixed alpha contamination to levels below unrestricted release criteria. If unable to achieve the unrestricted release criteria, the area will be protected to prevent release to the environment. Final foundation decontamination will be completed with environmental restoration. All proper radiological postings will be made. A discussion has been added to the CRSP.

6. There is no discussion on what or how isolation controls will be used to ensure the integrity of final surveys is preserved for areas undergoing final survey or areas that have been final surveyed.

**Response:**

A section has been added to the CRSP to discuss the levels of isolation controls that will be implemented for the B779 project.

7. There is no discussion on what background subtract values (local area background and reference area) will be utilized during final surveys. Detailed instruction to the RCTs need to be written on how to obtain the background values and how to record them. If used, reference area backgrounds need to be fully understood and documented. B123 had many problems associated with background values and their use.

**Response:**

The requirement for alpha background values and the methodology for recording these values will be delineated in the individual survey instructions provided for each area to be surveyed. These instructions will be written to ensure consistency with the applicable RSPs. Local area backgrounds will be performed in addition to the typical instrument background. Both backgrounds will be evaluated and the proper background will be applied to determine the proper MDAs and net dpm values.

8. There is no discussion on what criteria will be used to reclassify areas to a higher or lower classification level, if needed.

**Response:**

A discussion on the criteria for reclassifying areas has been added to the CRSP.

9. There is no discussion on what specific training RCTs, RCT Foreman, Rad Engineers, etc. need prior to performing final surveys.

**Response:**

A general discussion has been added regarding formal and informal training that will be provided to B779 Rad Safety Personnel.

10. Housekeeping and cleanliness of the survey area just prior to performing final surveys should be discussed. Since alpha contamination is hard to detect, survey areas should be cleaned to an acceptable level to detect alpha contamination (e.g., mop, wipe down surfaces, cleanup oil spots, remove loose equipment and debris, etc.)

**Response:**

Areas will be stripped out, and cleaned up prior to final survey. This information has been input into the CRSP.

11. Section 5.1.2, all building systems should be identified, characterized, and documented in the CRSP, Appendix D.

**Response:**

Building piping and ducting systems will be stripped out and radwasted, or surveyed and free released in accordance with HSP-18.10 prior to final survey. The intent is to have readily accessible surfaces with no interference in order to facilitate ease of surveying. This is particularly important for areas intended to be surveyed with automated monitoring systems.

12. Section 5.1.3.4, based on your discussion in section 5.1.3, I agree that surveying for alpha only is appropriate, however, additional wording should be added to adequately justify this position. An explanation or justification needs to be included with each of the three bulleted items. Indicate what was found out about these three items and why it supports not surveying for beta. Check your bullet numbering, section 5.1.3.4 should be 5.1.3.2.

**Response:**

Additional information to support alpha only monitoring has been input into the CRSP.

13. Section 5.2 Step 1, define what a "fraction" is in terms of instrument MDAs.

**Response:**

Section 5.2 has been revised to delineate the required MDAs. The intent is to use instrumentation that will provide typical MDAs of approximately 50% of the applicable DCGL. Count times will be increased to achieve this goal. In addition, attempts will be made to utilize instrumentation capable of achieving lower MDAs (e.g., automated floor monitoring systems, and large area probes). However, constraints by RISDC on the procurement of non-approved instruments can restrict new instrument use.

14. The terms "survey area" and "survey unit" are used throughout the CRSP. These definitions should be defined because it is not clear if they mean the same thing or are different. If they are the same, then use only one term (make terms consistent with MARSSIMs).

**Response:**

Will define survey areas and survey units and check for consistency in the CRSP.

15. Section 5.2, define what will happen to areas that cannot meet the unrestricted release criteria. Will the areas be deconned to remove any loose contamination, sprayed with fixident, then covered with metal plates, similar to what was done in B123?

**Response:**

Explanations of disposition of material will be input into the CRSP.

16. Will actual efficiencies of the Electras be used, if so, describe the process.

**Response:**

Actual efficiencies will be used for all survey equipment. The efficiency is determined by the calibration facility and provided with the instrument. Response checks are performed on a daily basis to verify the operability of the instrument.

17. Section 5.2 "if...then" statements, describe what will happen to the items that are "removed." For example, the items will be removed and disposed of as LLW.

**Response:**

Additional detail has been added to the CRSP.

18. Section 5.2 Step 6, what does "for the convenience of area classifications" mean?

**Response:**

An example of the convenience of classification is as follows: The building 729 plenum area is approximately 200 m<sup>2</sup>. Rather than divide the area into two survey units based on the recommended maximum size of 100 m<sup>2</sup> for Class 1 areas, calculations for the number of fixed and removable measurements can be made and this value multiplied by 2 (200 m<sup>2</sup>/100 m<sup>2</sup>) to account for the larger area. Of course a 100% scan would be performed over the entire area.

19. Section 5.2 Step 6, Delete the paragraph that starts with "Automated surface contamination..." The paragraph does not support the DQO question. In order to adequately answer this DQO question, I would suggest discussing the MARSSIM calculations and show an example of how they will be used. Also, discuss how the automated surface contamination monitors will satisfy the MARSSIM calculations. In general, more specific information should be added in the CRSP to adequately answer this DQO question.

**Response:**

Clarified the use of automated surface contamination monitors and indicated the fact that the number of measurements obtained by these systems far exceed the quantity required in accordance with MARSSIM calculations.

Provided an example statistical calculation in the CRSP.

By making the above changes, the DQO question will be answered.

20. Section 5.2 Step 6, DQO Question "What are the limits on decision errors." The answer to the DQO question does not answer the question. Shouldn't a discussion about the 95% CI, or some other type of statistical test belong here?

**Response:**

Revised the section and answered the DQO question.

21. Section 5.2 Step 7, How will the survey design be optimized?

- Based on lessons learned from B123 and Fort Saint Vrain, the best and easiest way to mark survey locations and grids are to use self-adhesive, brightly colored labels. Instead of using an alpha-numeric grid coordinate system to label the grids and then another numeric numbering system to denote survey locations, just use the same numeric numbering system to denote the grid and the survey location. Incorporating the alpha-numeric grid labeling only duplicates the numeric numbering system and adds no value, besides you would have to have more detailed instructions on how to use and implement the alpha-numeric system. Experiment using the alpha-numeric system in rooms that have numerous walls and crevices and you will see how hard this system can be to utilize. Although the authors of MARSSIMs may endorse the use of an alpha-numeric system, I don't believe they have actually tried to implement the system in a real life situation.
- If using a numeric numbering system and additional measurements are required in a grid, use the next sequential number at the end of the string for that area.
- Except for surveys using the automated surface monitor, all measurement locations should be identified on the surface with self-adhesive, brightly colored labels. I would suggest you get different colored labels for different survey types (e.g., separate colors for scoping surveys, characterization surveys, final surveys, media samples, investigation surveys, etc...).
- Why won't gridding of ceilings and roofs take place in class 1 and 2 areas?

**Response:**

Will re-evaluate the use of alpha-numeric gridding and revise the CRSP as required.

Will use different brightly colored survey labels as recommended.

Class 1 and Class 2 ceilings and roofs will be gridded - the CRSP has been corrected.

22. Section 8.0, it appears wording is missing at the end of the first sentence, "classifications is based on."

**Response:**

Fixed the CRSP - should be "based on MARSSIM"

23. Section 8.0, it appears wording is missing at the end of the second sentence, "in accordance with the following:" What is the following?

**Response:**

Sections 8.1 through 8.3 are the following. Fixed the CRSP.

24. Sections 8.1, 8.2, and 8.3 should reference Appendix E, for how to obtain media samples.

**Response:**

Referenced Appendix E in the CRSP.

25. Section 8.2.1, what will be the basis for determining what percent (10-100%) is scanned? Although MARSSIM recommends this range for Class 2 areas, this document is where "the rubber meets the road" and should be clearly defined at this point in the process.

**Response:**

Criteria for selecting the % scan has been input into the CRSP based on the number of elevated/above limit contamination values discovered during characterization surveys.

26. Section 11.1 and 11.2.1, what criteria (i.e., what is pass or fail) will be used when comparing the initial final survey results to the 5% QC survey results? Discuss the MARSSIMs comparison test, if any.

**Response:**

A variance of 0 to 2 will be the goal for QC samples based on a 95% confidence level. If not within this range, an investigation will be performed to determine the validity of the samples. This has been clarified in the CRSP.

27. Section 11.1, what is the technical basis for choosing only locations with original positive values for comparison to the 5% QC survey results?



**Response:**

As stated in MARSSIM (1st paragraph, page 4-37) replicate samples performed on values close to or below MDA would not provide useful Quality Control information. The CRSP has been modified to explain this.

28. Section 11.2.2, the wording in this section appears to state that the QC samples should be taken by the same contamination monitoring systems, this conflicts with Section 11.1 which states that QC samples should be taken with different instruments. Suggest rewording this section to clarify.

**Response:**

Should be same "type" of instrumentation in step 11.2.2. Will correct CRSP.

29. Section 11.3, add Survey Area Instructions.

**Response:**

Added survey instructions to this section in CRSP.

30. Section 11.5, the 50% of the unrestricted release criteria guide for MDAs should also be applied to special analysis samples and media samples. Add a statement in this section to reflect this guide.

**Response:**

Added to the CRSP.

31. Section 11.7.1, for clarification purposes, separate this section into each survey measurement type (e.g., Fixed, Removable, Scans, Media Samples, etc.) and then discuss how each type will be reported.

**Response:**

Separated in the CRSP.

32. Section 11.7.1, should reference Appendix E, for how to calculate media sample results.

**Response:**

Referenced Appendix E in this section.

33. Section 11.7.1, Media Samples, what happens if measurement results are between the average and the maximum values?

**Response:**

The CRSP has been corrected to reflect that values greater than the average DCGL will require remediation. The maximum DCGL will not apply for media samples.

34. Section 11.7.1, need more discussion on how elevated measurements will be investigated. Describe how the nine measurements will be obtained. Will the original measurement be used as a part of the nine measurements or will the original measurement be discarded and replaced with a new one? What about the grids or areas surrounding the elevated point, will they be surveyed and/or investigated? I don't think you should get tunnel vision and only look at that one grid or location when elevated areas arise. Will paint samples ever be required at elevated locations? How will the investigation measurements be communicated to RCTs? How will investigations be documented? How will investigation measurements be used for reporting purposes? Suggest you make a separate section in the CRSP for investigations and address all of these issues in that new section.

**Response:**

A new section was added to address these comments.

35. Section 11.7.1, what happens if the 95% confidence level test fails?

**Response:**

Individual data points will be evaluated. Outliers will be evaluated and discarded if necessary. Additional data points will be obtained if the total number of points after discarding outliers is not adequate.

36. Section 12.0, what does "at the conclusion of the project" mean? Does this mean before demo happens? Will the report be completed in sections to allow buildings to come down as they are ready (e.g., B729 this fall)? How are you going to package and present survey results for individual buildings, such as B729, for KH and Regulator review so they can be approved for demo as they become ready?

**Response:**

Re-worded the CRSP. The intent is to turnover final survey reports as packages upon completion of surveying each area. For example, the B729 final survey will be divided into three survey areas. In order to expedite the review process each survey area will be turned over independently as a separate package. In addition, an executive summary and an all inclusive package will be compiled for each major group such as B729, B779, B782.

37. Section 12.0, define what is the acceptable fraction in terms of the MDA for the surface contamination monitor for removable contamination.

**Response:**

Approximately 50% or as achievable with best available technology. The CRSP has been changed to indicate this.

38. Section 12.0, what criteria will be used to investigate data that is skewed with negative values?

**Response:**

Typically, alpha background subtraction should not result in an excessive number of negative values. The important issue is the magnitude of the negativity vs. the quantity of negative values. If a disproportional quantity of data is too negative, the statistical analysis of the data would reflect this anomaly, which would result in an investigation of the data, and the potential re-survey for data replacement. The CRSP has been changed to explain this.

39. Section 12.0, suggest reporting minimum, maximum and 95% CI values. Values greater than the average DCGL should be highlighted, and a different flag should be used for values greater than the maximum DCGL. Investigation measurements should be uniquely identified. Any spread sheets that are used to summarize survey data should be easily traceable back to the original survey data forms. Comprehensive, detailed, scaled, survey maps should accompany the data. Reported data should stand alone and include raw and final data, and any correction factors needed to convert from raw to final data should be included. MDAs and efficiencies for all survey types, including scans, should be reported. Locations and results of instrument backgrounds should be reported.

**Response:**

I agree that the average DCGL should be flagged, however, I don't necessarily see the need to flag maximum DCGLs differently. The average DCGL is the key indicator for an investigation and if the maximum DCGL is exceeded it will be easily identified.

Summary data will be keyed to original data via the unique survey area number.

Comprehensive, detailed survey maps, will be utilized. If adequate gridding and measurement marking systems are used, the requirement for maps to scale may not be necessary. The intent is to avoid the use of sophisticated, cumbersome and expensive cad drawing systems as was utilized at Fort St. Vrain which required cad operators and unnecessary complication and delays.

The intent is to have RCTs complete survey data forms and then all the data will be input directly into a database. Both raw data and records in the database will be considered quality records. There is no apparent value added to including raw data with possible pen and ink changes and redundant information. The raw data will be available for investigating anomalies and copies will be made available to DOE and K-H if requested for additional review.

MDA and efficiencies will be provided for each individual measurement in the final survey reports. MDAs for scans will be a non-variable value based on a required fixed scan rate and will be reported in the CRSP.

The daily background check performed for each instrument will be the background used for net alpha dpm calculations. The location of background alpha values is not relevant.

40. Section 12.0, graphical representation of the survey results would be helpful in identifying trends and anomalies.

**Response:**

Graphs can be generated for the final survey report if required.

41. Appendix A is not necessary. Since only the transuranic limit applies to B779 cluster and you have already stated these limits in the CRSP, adding this table provides no value and may lead to additional questions about the other radionuclide limits. If you decided to keep it, fix the table header.

**Response:**

Omitted Appendix A in the CRSP.

42. Appendix B, some of the allowable Bkgd counts are lower than the values in the RSPs. The reasons for the lower values should be clearly pointed out in the CRSP. The MDAs listed in the table for SAC-4 and LB-5100W are not even close to 50% unrestricted release criteria guide, suggest you change the count time in the table to reflex an MDA closer to the 50% guide.

**Response:**

The allowed background values in Appendix B are maximum values that can be used to achieve an acceptable MDA. This has been clarified in the CRSP. Written instructions will be provided to the RCT delineating the maximum acceptable background values in conjunction with the minimum efficiencies that will provide acceptable MDAs. These background values and efficiencies are conservative and do not conflict with the proceduralized values in the RSPs.

New MDAs will be calculated for longer count times for LB-5100W. The SAC-4 will not be used for final survey.

43. Appendix B, Laboratory Instrumentation, refer to comment #30.

**Response:**

Added to the CRSP.

44. Appendix B, Other Instrumentation, the 50% unrestricted release criteria guide for MDAs should also apply to automated surface contamination monitors.

**Response:**

I agree, has been addressed in the CRSP.

45. Appendix B, a discussion should be included on MDAs, scan speeds, etc. for performance of scan surveys. Refer to memos written for B123 scan surveys. Scan speeds should be adjusted accordingly such that the average fixed DCGL can be seen at the 95 CI, or some other acceptable level (refer to MARSSIM Section 6.7.2.2).

**Response:**

A discussion has been added to the CRSP.

46. Appendix B, unclear on how this appendix will be used for the final survey. Are there requirements in this appendix, will the RCTs be required to use the table, or is this just nice information to know? Clarify in CRSP why this appendix exists, and how and when it will be used.

**Response:**

Clarified in the CRSP.

47. Appendix C, refer to comments in #21 on grid identification. Recommend you develop a detailed legend for survey maps. This legend should be used consistently throughout the final survey. It should include designators for fixed/removable sample locations, scan locations, media samples, survey area boundaries, instrument background locations, elevated measurement locations; building/room, survey area locations; scale dimensions, classifications, etc.

**Response:**

An example of a map legend has been added to the CRSP.

48. Appendix D, add table header (e.g., Table D-1 Building/Room Radiological Survey Classifications), missing page D-1.

**Response:**

The table has been fixed and the missing page added.

49. Appendix D, what was the basis for these classifications, how were they determined? This process needs to be clearly documented, and supporting information included in the CRSP.

**Response:**

The basis for classifications has been documented in the CRSP.

50. Appendix D, none of the rooms have been split into different classifications (e.g., lower walls and floors class 1, upper walls and ceiling class 2). Is there a reason for not splitting the rooms?

**Response:**

Because of airborne contamination concerns and the fact that minimal surveys have been performed in the overhead, the decision was made to classify the overhead areas as Class 1 at the present time. These areas may be downgraded in the future.

51. Appendix E, instructions should be added to obtain a fixed and removable survey after the media sample was obtained. Instructions and acceptance criteria should also be discussed as it pertains to comparing the pre and post media fixed and removable surveys. It is not clear why you showed an example of converting the pCi activity to 100 dpm/100cm<sup>2</sup>, and showed the resulting 418.4 pCi value. Does this value mean something in terms of data acceptance? Clarify why you did this calculation, make it clear what exactly will be calculated and what release criteria will be used. The sampling tool should be surveyed after each sample. In the bolded Note, why mention other release criteria when alpha will only be used per the CRSP?

**Response:**

Post sampling fixed and removable survey will be performed. Appendix E was changed to reflect this.

Survey instructions to be written specifically for each sampling evolution will include pre and post acceptance criteria.

The example was intended to show the total pCi value required to equate to the average DCGL.

Added tool survey step between samples.

Removed bolded note.

52. Appendix F, suggest you keep the survey instructions on a separate form instead of combining with the survey data form. Recommend you have walk-throughs with RCTs using the CRSP appendices to ensure these forms work and are understood by all parties.

**Response:**

In an effort to reduce the volume of paper generated and in an effort to ensure an adequate paper trail between the survey instructions and the data form the two were combined. This was the form used for characterization surveys for B779 and worked fairly well. However, based on the complexity of the survey instructions it may make sense to separate the two. Will evaluate this.

As mentioned, the forms have been utilize for a majority of the characterization surveys performed to date in B779. They worked well and were readily accepted by the RCTs performing the surveys.

As part of the final survey OJT process the RCTs will be introduced to all the appendices and their input will be considered for any necessary enhancements.

53. Attachments, what is the value added by including these memos in the CRSP? I could not find anywhere in the CRSP body where they were referenced or discussed. Recommend removing them from the CRSP, and if any one questions the sample media approach you can then take these memos out of your back pocket and show them.

**Response:**

Removed these attachments as recommended.